

# Medication Error and Adverse Drug Event Reporting System

## MEADERS

*AHRQ PBRN Resource Center*

# Errors in Ambulatory Care

*The potential risk due to medication errors and adverse drug events from office prescribing is many times greater than that from hospital prescribing. <sup>1</sup>*

- No routine event reporting system for ambulatory care
- Inability to capture events that do not cause harm (near misses)
- Absent benchmarks for quality improvement

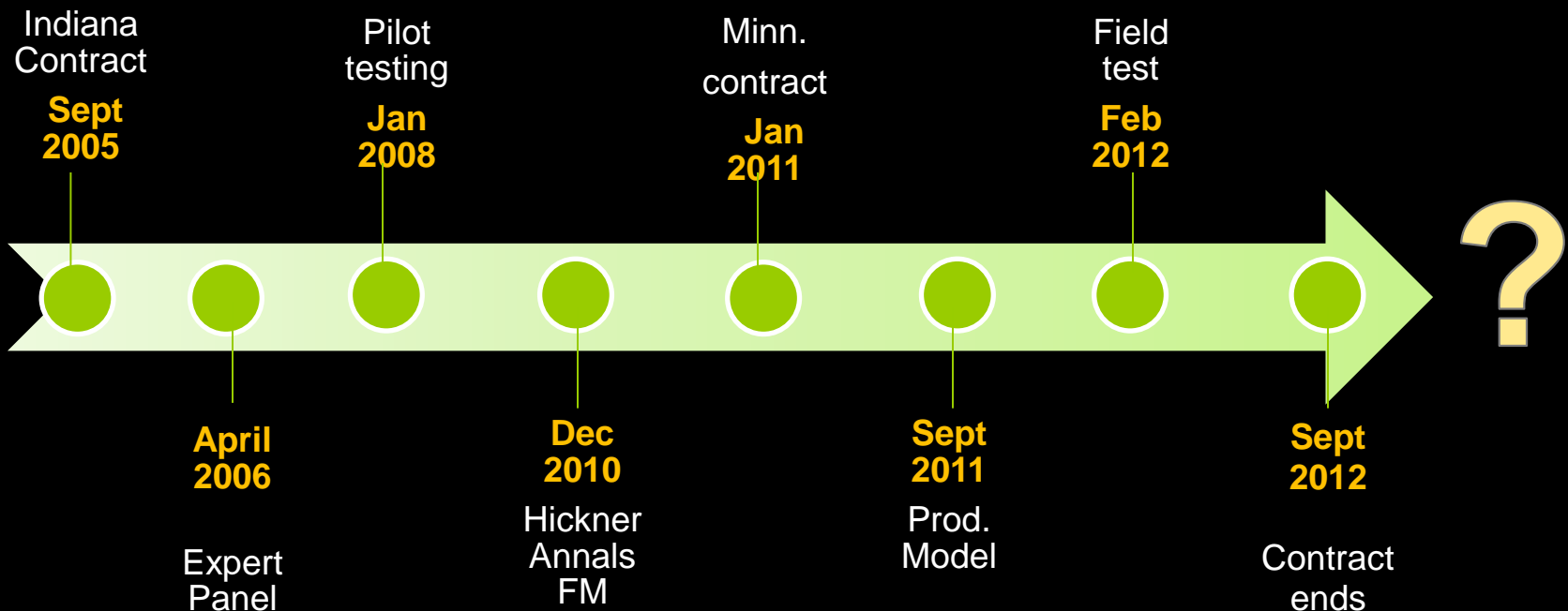
<sup>1</sup> Hickner et. al. Field Test Results of a New Ambulatory Care Medication Error and Adverse Drug Event Reporting System—MEADERS Ann Fam Med ;8:517-525.

# MEADERS Timeline

**Pilot**

**Development**

**Production**



# Overall functions

- Records new adverse events and errors
- Easily accessible
- Categorizes errors by type and contributing factors
- Compares practice rates to benchmarks
- Simplifies MedWatch reporting
- Secure, locally administered, rapidly deployable

# Medication Error and Adverse Event Reporting System

Filter:

Collaborate
 Sign
 Comment

**ROLES**

ADD NEW ROLE

**USER PROFILE**

Details Roles Gadgets

First Name: David Last Name: Lettmoregay

**USERS**

Clinic Practice Information

Clinic Start Date: 1/1/2001 Clinic End Date: 1/1/2001

**BY CONTRIBUTING FACT**

Date of Report: 3/30/2011 1:51:03 PM Last Name: Lettmore-Gay

**BY ERROR**

Start: 3/9/2011 End: 4/8/2011

**BY MEDICATIONS**

Date of Report: 3/30/2011 1:51:03 PM Last Name: Lettmore-Gay

VER: 1.1.3.22256 CLOSE FIXED PANEL X

**EVENTS LIST**

Search:

Date Of Report	PatientIdentifier	Report
3/30/2011 2:05:28 PM	1103345	Pet
4/26/2011 1:26:16 PM	12378	Ric
4/26/2011 1:51:19 PM	30301	Se
4/26/2011 1:51:57 PM	10975	Do
4/26/2011 3:11:44 PM	30506	Nu
4/26/2011 3:23:25 PM	30229	Dia
4/26/2011 3:41:20 PM	30396	Se
4/26/2011 4:00:09 PM	30174	Se
4/26/2011 4:07:46 PM	30329	Se
4/26/2011 4:36:36 PM	30426	Pill
4/26/2011 5:02:34 PM	30478	Col
4/27/2011 10:49:39 AM	30277	Sm
4/27/2011 10:52:34 AM	97453	Do
4/27/2011 11:01:49 AM	30451	Jor
4/27/2011 11:08:35 AM	55982	Arc
4/27/2011 11:18:07 AM	30111	Cai
4/27/2011 11:24:48 AM	29998	Lar
4/27/2011 11:40:09 AM	00325	Ste

**MEADERS REPORT**

Identification What Happened? Medication Inv

**Adverse Drug Event (ADE)**

☐ Idiosyncratic Reaction

☐ Drug/Diagnosis Interaction

☐ Drug/Drug Interaction

**Receiving Medications (Administering)**

☐ Patient Failed to Take Medication Correctly (e.g. Took

☐ Patient Continued to take Medications After Order to

☐ Sample or OTC Medications Incorrectly Supplied

☐ Different Care Providers Mixing up Medications

**Errors**

**Ordering Medications (Prescribing Error)**

☐ Contraindicated Medication Prescribed

☐ Drug Prescribed is Wrong

☐ Dose Prescribed is Wrong

☐ Phone Order Misinterpreted

☐ Wrong Patient Name on Prescription

☐ Failure to Order the Needed Medication

☐ Prescription Phoned to the Wrong Pharmacy

☐ Pharmacy/Practice did not return Phone Calls

Previous Next Submit View MedWatch Report Print

**BY ERROR**

Start: 1/19/2011 End: 1/19/2011

Report Data

Dose Dispensed is

Drug Dispensed is

Drug Prescribed is

Failure to Order the

Inadequate M

Medication NOT c

Pharmacy/Practice did

Prescription Phoned

Wrong

Meaders

Medications

Errors

ContribFactors

Users

PBRN Resources

Please fill out the following form. Highlight Fields

**MEDWATCH**  
The FDA Safety Information and Adverse Event Reporting Program

**Section A - Patient Information**

1. Patient Name: [Text] 2. Date of Birth: [Text] 3. Sex: [Text] 4. Race: [Text]

**Section B - Adverse Event, Product Problem or Error**

1. Date of Onset: [Text] 2. Date of Report: [Text] 3. Date of Resolution: [Text]

**Section C - Product Availability**

1. Name: [Text] 2. Strength: [Text] 3. Manufacturer: [Text]

**Section D - Suspect Product(s)**

1. Name: [Text] 2. Strength: [Text] 3. Manufacturer: [Text]

**Section E - Suspect Medical Device**

1. Brand Name: [Text] 2. Common Name: [Text]

**Section F - Other (Concomitant) Medical Products**

1. Name: [Text] 2. Strength: [Text] 3. Manufacturer: [Text]

**Section G - Reporter**

1. Name: [Text] 2. Title: [Text] 3. Organization: [Text]



# Scenario

- 42 yo BF fell on the ice
- Sustained injury to left chest
- Physical exam
  - Lungs clear, CV exam normal
  - Pain localizes at 8<sup>th</sup> rib. No step off.
  - Prescription for Vicodin 10 mg
  - During the visit the nurse came in and said that a lab requisition on another patient hadn't printed in the lab and needed to be sent again
  - Patient was given prescription and released

# Scenario

- Nurse returns with the prescription
- The wrong patients name is printed on it
- Prescription reprinted with the correct name
- Currently the process stops
  - Differing opinions exist about what happened
    - Nurse blames doctor
    - Doctor blames nurse
    - Patient concerned about future errors



# Scenario

- Live demonstration
  - Based on an actual case
  - Data entry for Scenario
    - Record new event
    - Compare rates to all practices
    - Pages configure to optimize time



# Scenario

- Quality Improvement reviews existing errors
  - Benchmarks reviewed
  - Different versions of event are considered
  - Contributing causes examined
- Root causes determined – wrong patient
  - Patient name was being blocked by a drop down box on the prescription page (remote desktop)
  - Patients name was not visible when prescribing
- Solution
  - Hide the drop down box (show patient name when prescribing)
  - Additional process changes

# Initial Report

- Four PBRNs
- 507 errors
- 24 practices
- Identified the most common errors in ambulatory primary care
- Categorized contributing factors to errors

# From prototype to production

- 2011 AHRQ sponsored development
  - Enhance scalability
  - Enhance security
  - Support multiple operating systems
  - Implement new authentication scheme
  - Simplify access

# Scaling to a larger audience

- MySQL database
- C# Framework
- Replace proprietary drug interface
- Runs within an internet browser
  - Microsoft Silverlight plug-in
  - Open source Moonlight plug-in

# Results of Alpha testing

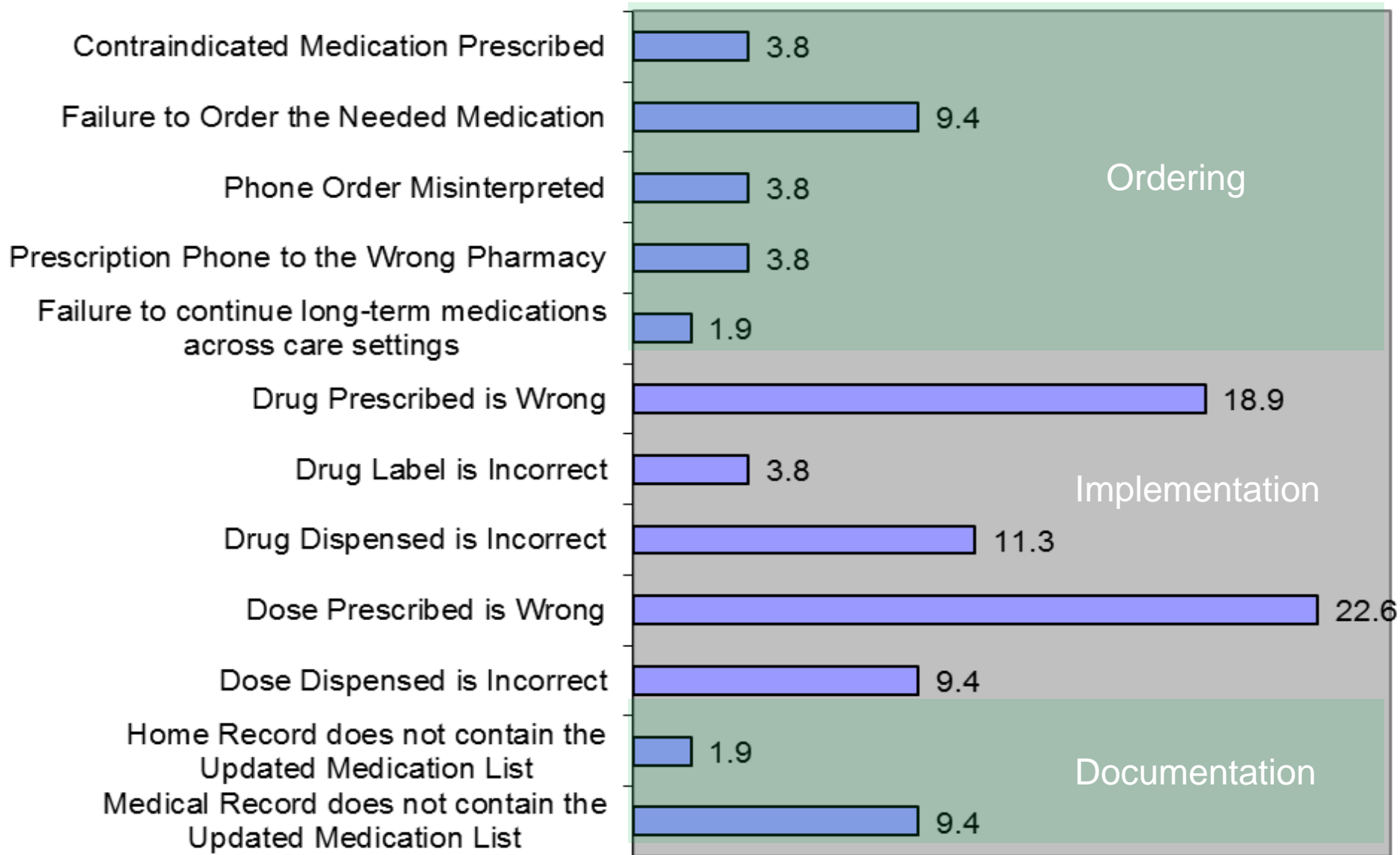
- Cleveland Clinic
  - Principal Investigator John Hickner
- Four practices
  - Primary Care
  - One month intervention
- Initial training
  - 30 minute demonstration
  - Handouts
  - Hands on practice.
- Secure storage of information

# Testing the software

- 27 people reporting errors
- 81 reports
  - 51% Medication errors
  - 13% Adverse drug reactions
  - 13% Patient errors
- 73 different drugs involved
- 12 different types of error reported
- 12 contributing factors identified
- Harm done?
  - 61% No harm done
  - 38% Potential for harm
  - 1% Life threatening harm



# Types of Errors



# Contributing factors

<b>Written Communication Problem</b>	<b>12%</b>
<b>Computer Error or Malfunction</b>	<b>7%</b>
<b>Calculation Error</b>	<b>6%</b>
<b>Transcription Error</b>	<b>6%</b>
<b>Abbreviation is Misunderstood</b>	<b>4%</b>
<b>Verbal Communication Problem</b>	<b>4%</b>
<b>Fax Problem</b>	<b>2%</b>
<b>Office Procedure or Protocol not followed correctly</b>	<b>2%</b>
<b>Handwriting is Illegible or Unclear</b>	<b>1%</b>
<b>Look Alike Drug Names</b>	<b>1%</b>
<b>Sound Alike Drug Names</b>	<b>1%</b>
<b>Verbal Order</b>	<b>1%</b>

# Software Feedback

- RedCap survey of participating clinic staff
- MD, DO, RN, LPN, MA, Lab Tech
- Usability (agree/strongly agree)
  - Little or no difficulty using the system 67%
  - “Easy to use” 50%
  - Does not take too much time 67%
  - Candid reporting 83%
  - Increases awareness of how errors occur 44%
  - Improves patient care 39%
  - No concerns about privacy 78%

# System improvement

- How to increase use
  - More opportunity to access 62%
  - Greater awareness of benefits 38%
  - More assurance of confidentiality 33%
- Comments
  - Decrease the time it takes to report an event
  - Better integration with EHR
  - Single sign on

# Other Agency Interest

- HRSA
  - Implementation in FQHCs
  - Testing underway in Tucson
  - Modification for pharmacy reporting
- FDA
  - Interest in accepting electronic reports
  - Enhancing data quality of MedWatch voluntary reporting

# MEADERS

- Advantages of MEADERS reports to FDA MedWatch Program
  - Authenticated users
  - Medical professionals
  - Captures events that caused no harm
  - Events are verifiable



# Dissemination

- Spring 2012
  - MEADERS available to all registered PBRNs
  - FQHCs and other health systems
- Available on line for 4-6 months
- Available as a download after that time for local installation